

dicyclopentenyl (meth)acrylate, dicyclopentyloxyethyl (meth)acrylate, carbitol (meth)acrylate, acryloyl morpholine, nonylphenoxy polyethylene glycol (meth)acrylate, nonylphenoxy polypropylene glycol (meth)acrylate, and a half-ester obtained by reacting a hydroxyl group-containing (meth)acrylate with the acid anhydride of a polycarboxylic acid compound. For the hydroxyl group-containing (meth)acrylate to use for preparing the half-ester, the acrylate as described in the paragraph of the ethylenically unsaturated group-containing hydroxy compound (d) can be used and includes 2-hydroxyethyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, and 1,4-butane-diol mono(meth)acrylate. For the acid anhydride of a polycarboxylic acid compound to use for preparing the half-ester, the polybasic acid anhydride as described in the paragraph of the polybasic acid anhydride (b-2) can be used and includes succinic anhydride, maleic anhydride, phthalic anhydride, tetrahydrophthalic anhydride, and hexahydrophthalic anhydride for preferable examples.

The polyfunctional acrylate compound to use for the reactive diluent (C-1) is a compound having two or more acrylate group and includes ethylene oxide denatured bisphenol A di(meth)acrylate, propylene oxide denatured bisphenol A di(meth)acrylate, ethylene oxide denatured bisphenol F di(meth)acrylate, 1,4-butane-diol di(meth)acrylate, dicyclopentanyl di(meth)acrylate, hydroxypivalic acid

neopentyl glycol di(meth)acrylate, caprolactone denatured hydroxypivalic acid neopentyl glycol di(meth)acrylate, polyethylene glycol di(meth)acrylate, tripropylene glycol di(meth)acrylate, neopentyl glycol di(meth)acrylate, trimethylol propane tri(meth)acrylate, trimethylol propane polyethoxy tri(meth)acrylate, glycerin polypropoxy tri(meth)acrylate, pentaerythritol tetra(meth)acrylate, the poly(meth)acrylate of a reaction product of dipentaerythritol with ϵ -caprolactone, dipentaerythritol poly(meth)acrylate, and epoxy(meth)acrylate, namely, the reaction product of a mono- or poly-glycidyl compound with (meth)acrylic acid. The mono- or poly-glycidyl compound includes butyl glycidyl ether, phenyl glycidyl ether, polyethylene glycol diglycidyl ether, polypropylene glycol diglycidyl ether, 1,6-hexane-diol diglycidyl ether, hexahydrophthalic acid diglycidyl ester, glycerin polyglycidyl ether, glycerin polyethoxy glycidyl ether, trimethylol propane polyglycidyl ether, and trimethylol propane polyethoxy polyglycidyl ether.

The preferable compound includes a C3-C10 aliphatic polyalcohol poly(meth)acrylate having 2-4 hydroxyl groups; the diacrylate of a C2-C10 glycol diglycidyl ether; and a poly lower-alkylene glycol diacrylate, such as polyethylene glycol diacrylate, the diacrylate or the trimethylol propane tri(meth)acrylate of 1,6-hexane-diol diglycidyl ether, dipentaerythritol poly(meth)acrylate, and the

poly(meth)acrylate of the reaction product of dipentaerythritol with ϵ -caprolactone.

For the other (meth)acrylate in the resin composition of the present invention, a polyester (meth)acrylate or a polybutadiene (meth)acrylate may be used. The polyester (meth)acrylate includes a condensate of the polyol compound as described in the above paragraph of the polyol compound (a) with (meth)acrylic acid. The polybutadiene (meth)acrylate includes a condensate of a liquid polybutadiene compound having terminal hydroxyl group with (meth)acrylic acid; and a compound obtained by reacting a liquid polybutadiene compound having terminal hydroxyl group with the above polyisocyanate compound and then reacting with a ethylenically unsaturated group-containing hydroxy compound as described in the above paragraph of the ethylenically unsaturated group-containing hydroxy compound (d).

The photopolymerization initiator (E) used in the present invention includes a benzoin such as benzoin, bdnzoin methylether, benzoin ethylether, benzoin propylether and benzoin isobutyl ether; an acetophenone such as acetophenone, 2,2-dimethoxy-2-phenylacetophenone, 2,2-diethoxy-2-phenylacetophenone, 1,1-dichloroacetophenone, 2-hydroxy-2-methyl-1-phenylpropane-1-one,